

IN THE CLAIMS

Amend Claims 1-22 as follows:

1. (Currently amended) Fluid sensor containing a fluid cell (1) to enclose a volume of fluid (7), i.e. gas or liquid[,] ~~that is to be analysed~~ analyzed, said fluid sensor comprising

an electromagnetic energy source (3) arranged to transmit electromagnetic waves (4) into the fluid cell (1), ~~and~~

at least one detector (5) to detect electromagnetic waves passing through the fluid cell (1), ~~and~~

at least one opening (2) for the inlet/outlet of fluid ~~that is to be analyzed~~ analysed, and

a circuit board (8, 10, 11, 12, 13, 14, 15, 16) to evaluate the intensity of electromagnetic waves reaching said at least one detector (5) and/or to provide the circuitry for the electromagnetic energy source (3), ~~characterized in that~~

at least part of the fluid cell (1) is being incorporated into the substrate of the circuit board (8, 10, 11, 12, 13, 14, 15, 16).

2. (Currently amended) Fluid sensor according to claim 1, ~~characterized in that~~ ~~it which~~ is a gas sensor.

3. (Currently amended) Fluid sensor according to claim 1, ~~characterized in that~~ ~~it which~~ is a liquid sensor.

4. (Currently amended) Fluid sensor according to claim 1 ~~any of the preceding claims~~, wherein characterized in that at least part of the internal walls of the fluid cell (1) are coated with a material (9) that is reflective to the electromagnetic waves (4) passing through the fluid cell (1).

5. (Currently amended) Fluid sensor according to claim 4, characterized in that wherein at least part of the internal walls of the fluid cell (1) are coated with a metal such as gold or silver.

6. (Currently amended) Fluid sensor according to claim 1 ~~any of the preceding claims~~, wherein characterized in that the electromagnetic energy source (3) and/or said at least one detector (5) is/are mounted on the circuit board (8, 10, 11, 12, 13, 14, 15, 16).

7. (Currently amended) Fluid sensor according to claim 1 ~~any of the preceding claims~~, wherein characterized in that the electromagnetic energy source (3) is a light source, such as an infrared light source and said at least one detector (5) is an optical detector.

8. (Currently amended) Fluid sensor according to claim 1 ~~any of the preceding claims~~, wherein characterized in that the the circuit board of the fluid sensor comprises a heat-generating component in the vicinity of the fluid cell.

9. (Currently amended) Fluid sensor according to claim 1 ~~any of the preceding claims~~, wherein characterized in that the fluid cell extends through the circuit board (8, 10, 11, 12, 13, 14, 15, 16) and/or across the circuit board.

10. (Currently amended) Fluid sensor according to claim 1 ~~any of the preceding claims~~, wherein characterized in that the fluid cell (1) is fully embedded in the substrate of the circuit board (8, 10, 11, 12, 13, 14, 15, 16).

11. (Currently amended) Fluid sensor according to claim 1 ~~any of the claims 1-8, wherein characterized in that~~ the fluid cell (1) extends along a surface of the circuit board (8, 10, 11, 12, 13, 14, 15, 16).

12. (Currently amended) Fluid sensor according to claim 1 ~~any of the preceding claims, wherein characterized in that~~ the fluid cell (1) is built up of a plurality of circuit boards (8, 10, 11, 12, 13, 14, 15, 16) stacked together.

13. (Currently amended) Fluid sensor according to claim 1 ~~any of the preceding claims, comprising characterized in that it comprises~~ a plurality of fluid cells (1) incorporated into the substrate of the circuit board (8, 10, 11, 12, 13, 14, 15, 16).

14. (Currently amended) Fluid sensor according to claim 13, wherein characterized in that it the plurality of fluid cells (1) comprises at least one test channel to determine the attenuation at a wavelength not influenced by a fluid (7) ~~that is to be analysed analyzed~~, but close to the fluid (7) ~~it~~,

to provide a measure of the variation of the electromagnetic signal influenced by environmental parameters and not by the analyzed analysed fluid.

15. (Currently amended) Fluid sensor according to claim 1 ~~any of the preceding claims, characterized in that it comprises comprising~~ a flexible circuit board (8, 10, 11, 12, 13, 14, 15, 16).

16. (Currently amended) Method for producing a fluid sensor having a fluid cell (1), ~~characterized in that it comprises comprising~~ the step of forming a trench having at least one substantially smooth surface in the substrate of a circuit board (8, 10, 11, 12, 13, 14, 15, 16) which will constitute at least part of a fluid cell (1).

17. (Currently amended) Method according to claim 16, comprising characterized
~~in that it comprises~~ the further step of coating at least part of the, or each, wall of the trench
with a material (9) that is reflective to the electromagnetic waves (4) that pass through the
fluid cell (1), such as metal.

18. (Currently amended) Method according to claim claims 16 or 17, comprising
characterized
~~in that is comprises~~ the further step of stacking a plurality of circuit boards (8, 10, 11, 12,
13, 14, 15, 16) together ~~so as~~ to form a fluid cell (1).

19. (Currently amended) Use of Method of using a fluid sensor according to
claim 1, comprising the step of any of the claims 1-15 for
determining the concentration of a gas (7) such as carbon dioxide, carbon
monoxide, a hydrocarbon, nitrous oxide or a liquid hydrocarbon or any other gas or liquid
having attenuation bands in the infrared range.

20. (Currently amended) Use of Method of using a fluid sensor according to
claim 1, comprising the step of any of the claims 1-15 for
determining the concentration of carbon dioxide in the exhaled air of a person or a
person's breathing frequency.

21. (Currently amended) Use of Method of using a fluid sensor according to
claim 1 any of claims 1-15 as a trace gas or liquid meter.

22. (Currently amended) Use of Method of using a fluid sensor according to
claim 1, comprising the step of any of the claims 1-15 for determining the pressure,
structure or composition of a gas or liquid.